

MEMO

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TO: Plans & Programs Technical Advisory Committee

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SUBJECT: Regional Aviation Demand Forecast Scenarios for 2012 RTP

At its last meeting on July 28, 2011, the SCAG Aviation Technical Advisory Committee (ATAC) debated and approved three alternative 2035 regional air passenger demand forecast scenarios for commercial airports, for potential inclusion in SCAG's 2012 Regional Transportation Plan (RTP). These include baseline/ medium growth, low growth, and high growth scenarios. ATAC members generally agreed that the scenarios present a reasonable range of possible growth rates for commercial aviation in the region over the next 25 years. This memo describes these forecast scenarios, including an allocation of 2035 passenger demand to individual commercial airports for each scenario. Since sophisticated aviation demand modeling was not used to generate these allocations, as was used in previous RTPs, the allocation process was a fairly simplistic exercise as described below. Regional 2035 air cargo forecasts and allocations will be presented at a later date after additional trend analysis work has been completed by SCAG consultants.

A. Comparison of Regional Air Passenger Demand Forecasts with Other Recent Forecasts

SCAG consultant Geoff Gosling of Aviation System Consulting has reviewed recent aviation industry air passenger demand forecasts and consistency of those forecasts with the 2035 baseline, high and low growth regional air passenger demand forecast scenarios that were approved by ATAC for inclusion in the 2012 RTP. Those recent forecasts include ones completed by the FAA, Boeing, Airbus, the San Francisco Bay Area (Regional Airport System Plan Analysis) and San Diego County (Regional Aviation Strategic Plan). A comparison of the yearly (per annum) growth rates between these forecasts can be seen below. The combined commercial activity level served by the six air carrier airports in the region in 2010 was 81.48 million annual air passengers (MAP). This is up from the 79.08 MAP they served in 2009, but it is still significantly lower than the 90.06 MAP they served in 2007.

Average Annual Growth Rates of Alternative Passenger Forecast Scenarios

- | | |
|-------------------------------------|-----------|
| 1. Baseline Scenario (145.9 MAP) | 2.5% p.a. |
| 2. Low Growth Scenario (130.0 MAP) | 2.1% p.a. |
| 3. High Growth Scenario (164.0 MAP) | 3.0% p.a. |

Average Annual Growth Rates of Recent Industry and Regional Passenger Forecasts

- | | |
|--------------------------------|-------------------|
| 1. FAA Aerospace Forecast | 3.2% p.a. |
| 2. Boeing | 3.2% p.a. |
| 3. Airbus | 2.7% p.a. |
| 4. California regional studies | 1.4% to 2.8% p.a. |

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In general, the annual growth rates of these air passenger forecast scenarios for the SCAG region (baseline, high growth and low growth) are somewhat lower than growth rates in forecasts developed by the FAA, Boeing and Airbus, and are generally consistent with growth rates in forecasts developed by the other two regions in California. However, the Low Growth Scenario growth rate is not as low as the lowest growth rates recently considered by the other California regions. Strategically, the upper forecast in the High Growth Scenario is more important than the lower forecast, since the upper forecast determines whether or not the region may run out of airport capacity earlier than was anticipated if it is too low. If it is too high, the forecast can just be pushed farther out into the future when it is updated by the next RTP cycle.

There was some debate at the last two ATAC meetings about the reasonableness of the growth rates in the Baseline, High Growth and Low Growth scenarios. In general, the members thought they bracketed a reasonable a reasonable range of possible growth rates for commercial aviation in the region over the next 25 years, which is consistent with other recent forecasts (although the San Francisco Bay Area and San Diego have considered even lower yearly growth rates than what is reflected in the Low Growth Scenario).

B. Descriptions and Allocations for 2035 Baseline, Low Growth and High Growth Regional Air Passenger Demand Forecast Scenarios

1. Baseline Scenario (145.9 MAP)

The 2035 Baseline Scenario is essentially the same as the 2035 Constrained/No Project Scenario that was modeled and evaluated by the 2008 RTP. The Constrained Scenario was characterized in the 2008 RTP as a very conservative vision for the regional airport system. It assumed no intra-regional maglev high-speed rail system, no market incentives, and very conservative behavior on the part of the airlines in adding flights at new and emerging airports (although all air carrier airports that desire commercial service were allocated some passenger demand even if they currently serve none, which in reality is unlikely, but this scenario did not seek to choose winners and losers). Like the other scenarios in the 2008 RTP, the Constrained Scenario respected existing legally-enforceable policy and physical capacity constraints at urban airports.

In 2003 the legally-enforceable Settlement Agreement at John Wayne Airport was amended to allow it to expand from 8.4 MAP to 10.8 MAP, so this new policy constraint was incorporated in the 2008 RTP Constrained Scenario. A more detailed evaluation of the runway capacity constraint at Ontario Airport raised its capacity constraint from 30.0 MAP to 31.6 MAP. The Bob Hope terminal gate constraint of 10.7 MAP that was used in the 2004 RTP was lowered to 9.4 MAP since Bob Hope Airport staff determined that the four remote aircraft parking gates assumed in the 2004 plan were no longer available for aviation uses. At the request of the March Joint Powers Commission, instead of assuming that March Inland Port was unconstrained, it was considered to be constrained by the 21,000 annual civilian operations allowed in the operative joint use agreement with the Air Force. A RADAM model capacity analysis determined that this constraint equates to 2.5 MAP at March Inland Port, compared to an 8.0 MAP 2030 unconstrained forecast for March in the 2004 RTP. A refined capacity analysis of San Bernardino International's one-runway system produced a runway capacity constraint of 8.7 MAP. Neither March nor San Bernardino reached their capacity constraints in the Constrained Scenario due to its conservative assumptions about future airline air service behavior.

The assumptions and parameters used to model the 2035 Constrained Scenario for the 2008 RTP are as follows:

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- LAX: Settlement Agreement: 78.9 MAP
- Bob Hope: Existing terminal/gate capacity: 9.4 MAP
- Long Beach: Flight restriction of 41 air carrier flights/day: 3.2 MAP
- John Wayne: Revised Settlement Agreement: 10.8 MAP
- Ontario: Existing runway capacity: 31.6 MAP
- San Bernardino and Palmdale: Charter, corporate & commuter/short haul
- March and Southern California Logistics: Cargo, charter and corporate
- Oxnard and Imperial: Corporate, charter and commuter only
- Planned (2008 RTP) ground access improvements
- No market incentives
- No high-speed rail (intra-regional Maglev system)
- Doubling of aircraft fuel costs

Allocations for the 2035 Constrained Scenario in the 2008 RTP are as follows:

Air Carrier Airports

Bob Hope	9.4 MAP
John Wayne	10.8 MAP
LAX	78.9 MAP
Long Beach	3.2 MAP
March Inland Port	0.6 MAP
Ontario	31.6 MAP
Palmdale	2.6 MAP
Palm Springs	4.1 MAP
San Bernardino	2.9 MAP
So. Cal. Logistics	0.7 MAP

Commuter Airports

Imperial	0.9 MAP
Oxnard	0.2 MAP

Region Total 145.9 MAP

However, Long Beach Airport reached 3.0 MAP in 2010, and will likely exceed its estimated 3.2 MAP constraint in the near future since it still has most of its 25 available commuter slots yet to be filled. The Terminal Improvement EIR forecast for Long Beach Airport was 4.2 MAP, which was also the forecast for Long Beach Airport in the 2008 RTP adopted Preferred Scenario regional aviation forecast. Therefore the allocation to Long Beach is increased to 4.2 MAP in the Baseline Scenario, and 1 MAP is subtracted from Ontario and San Bernardino airports on a proportional basis, to keep to the 145.9 MAP total for the Baseline Scenario. This is reasonable since the increased service at Long Beach will likely draw from the same Los Angeles County and Orange County markets that these airports would also draw from in 2035. Also, previous RADAM modeling showed that Ontario Airport barely reached its 31.6 MAP capacity constraint in the Constrained Scenario, and could easily fall below this number using different modeling assumptions.

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These adjustments result in a slight re-allocation of the forecast demand for the Baseline Scenario as shown below.

Air Carrier Airports

Bob Hope	9.4 MAP
John Wayne	10.8 MAP
LAX	78.9 MAP
Long Beach	4.2 MAP
March Inland Port	0.6 MAP
Ontario	30.7 MAP
Palmdale	2.6 MAP
Palm Springs	4.1 MAP
San Bernardino	2.8 MAP
So. Cal. Logistics	0.7 MAP

Commuter Airports

Imperial	0.9 MAP
Oxnard	0.2 MAP

Region Total 145.9 MAP

2. Low Growth Scenario (130 MAP)

The 130 MAP total assumed for the 2035 Low Growth scenario is not based on any past modeling, and is lower than any regional aviation scenario modeled for previous RTPs, including 2020 forecasts for the 1998 RTP. It is viewed by ATAC to represent a reasonable low end of the range of possible regional aviation demand futures. The demand allocation for this scenario assumes that the constrained urban airports (LAX, Bob Hope, Long Beach and John Wayne) would still reach their capacity constraints, and allocation of the remaining passenger demand (26.7 MAP) to the other airports would be based on their proportional shares in the Baseline Scenario. This yields the following allocation to airports in the Low Growth Scenario:

Air Carrier Airports

Bob Hope	9.4 MAP
John Wayne	10.8 MAP
LAX	78.9 MAP
Long Beach	4.2 MAP
March Inland Port	0.4 MAP
Ontario	19.2 MAP
Palmdale	1.6 MAP
Palm Springs	2.6 MAP
San Bernardino	1.8 MAP
So. Cal. Logistics	0.4 MAP

Commuter Airports

Imperial	0.6 MAP
Oxnard	0.1 MAP

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Region Total 130.0 MAP

3. High Growth Scenario (164 MAP)

The 2035 High Growth Scenario represents an extrapolation of the 2030 FAA Terminal Area Forecast (TAF) for air carrier airports in the region (3.0% growth rate per annum). The TAF is an unconstrained econometric forecast for established air carrier airports, based on historical trends as reported by the airports themselves. The 2030 TAF for LAX, Long Beach, Burbank and John Wayne airports exceeds their legally-enforceable or physical capacity constraints by significant margins. At 164 MAP, the High Growth Scenario is slightly below the 165.3 MAP forecast of the 2035 Preferred Scenario adopted for the 2008 RTP. Like all the other regional aviation demand scenarios modeled for the 2008 RTP, the Preferred Scenario respected legally-enforceable policy constraints and physical capacity constraints at the urban air carrier airports, as well as estimated capacity constraints at Ontario Airport (runway capacity) and March Inland Port (civilian operations allowed by the joint use agreement with the Air Force). It assumed much more willingness on the part of the airlines to invest in new flights at new and emerging airports than in the Constrained Scenario, and a package of market and ground access incentives including the following:

- For Palmdale, ground access reliability would be the same as other airports. This assumes that additional access routes will be constructed to decrease the dependence of Rte. 14 in providing ground access to Palmdale Airport.
- For Palmdale, future air trip propensities in the Antelope Valley increased by 15 percent to bring them closer to those in the San Fernando Valley. This assumes more high-income and high-tech employment in the Antelope Valley in the future.
- For Palmdale, San Bernardino, March and Southern California Logistics airports: 100 percent of residents and 80 percent of non-residents are aware of airport choices. This assumes pervasive marketing campaigns, and automated internet-based booking systems.
- Low-cost parking available at Palmdale, San Bernardino, March and Southern California Logistics airports.
- Free shuttle service from major activity centers to Palmdale, San Bernardino, March and Southern California Logistics airports.

Modeling for the Preferred Scenario also assumed an abbreviated version of a proposed intra-regional high-speed rail (maglev) system, which is the Initial Operating Segment (IOS) running from West Los Angeles to Ontario Airport, and extending west to LAX and east to San Bernardino International. It also assumed that the commuter airports in the region—Imperial and Oxnard—would be able to accommodate short-haul air carrier service with the introduction of a new generation of high-performing regional jets.

Without new aviation demand modeling, the allocation of demand to individual airports in the High Growth Scenario is problematic, since a number of factors that drove the modeled allocations in the Preferred Scenario are no longer relevant. The most glaring of these is the intra-regional high-speed rail system that will not be included in the 2012 RTP. A variety of assumptions were also liberally employed to increase the demand allocations to outlying airports such as Palmdale and Southern California Logistics airports, which are now unrealistic in the current economic environment. The demand allocations for the High Growth Scenario therefore assumes that LAX, Bob Hope, Long Beach, John Wayne, Ontario and March will all reach their capacity constraints, and the remaining demand (26.6 MAP) would be allocated to the remaining airports based on their proportional shares in the Baseline Scenario. The exception would be Imperial County Airport, since it is reasonable to assume a proposed new airport there can provide short-haul service

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in the future and serve spillover demand from San Diego County, once Lindbergh Field/San Diego International reaches its estimated physical capacity constraint of 22.9 MAP (Imperial County has completed extensive planning for a new replacement airport). The demand allocation to Imperial County Airport was 3.5 MAP in the Preferred Scenario, which assumed a new replacement airport with express bus service to and from San Diego County, and will also be assumed for the High Growth Scenario. This is a realistic assumption in view of the fact that SCAG Region airports will likely serve increased spillover demand from San Diego County if that county does not solve its looming airport capacity problems (RADAM modeling done in for past RTPs included serving future spillover demand from San Diego County). This approach yields the following allocation to airports in the High Growth Scenario:

Air Carrier Airports

Bob Hope	9.4 MAP
John Wayne	10.8 MAP
LAX	78.9 MAP
Long Beach	4.2 MAP
March Inland Port	2.5 MAP
Ontario	31.6 MAP
Palmdale	5.8 MAP
Palm Springs	9.1MAP
San Bernardino	6.2 MAP
So. Cal. Logistics	1.6 MAP

Commuter Airports

Imperial	3.5 MAP
Oxnard	0.4 MAP

Region Total	164.0 MAP
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